

# RF1: Weak decays of b and c quarks

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Rare and Precision Frontier Topical Convener Meeting

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# Outline of report

1. General introduction

General introduction about heavy flavor

2. Physics priorities for the next 10-20 year

Executive summary of the priorities and the big questions

3. High precision in CKM unitarity tests

4. B(s) mixing and CPV

5. CPV in baryons

6. Charm mixing and CPV

7. Lepton-flavor violation and lepton-flavor universality

8. Rare decays

# Plans for contributed papers

	A	B	C
1	<b>Solicited whitepapers</b>		
2	<b>Title/topic</b>	<b>Ideas for who to ask</b>	<b>Status</b>
3	b $\rightarrow$ c tau nu transitions	Datta, Cheaib, Biplab, Franco Sevilla, Ciezareck, Browder, ...	
4	Vub/Vcb	Bernlochner, Dorigo, Owen	
5	CKM angle gamma	Jurik, Libby	
6	CKM angle alpha	Dalseno, Tonelli	Tonelli expressed interest
7	CPV in b baryons	Bhubanjyoti Bhattacharya, Shibasis Roy, Rahul Sinha, N. G. Deshpande	
8	Charm mixing and CPV	Carbone, Morello, Stahl, Bennet, Casarosa, Li, Schacht, Paul, Silvestrin	Morello and Bennet expressed interest
9	Rare b decays	Altmannshofer, Archilli, Sandilya	
10	LFU/LFV in neutral currents	Trabelsi, Alvarez Cartelle	
11			
12	<b>Expected from the community</b>		
13	<b>Title</b>	<b>Authors</b>	<b>Status</b>
14	New physics in B meson mixing: future	J. Charles, S. Descotes-Genon, Z. Ligeti, S. Monteil, M. Papucci, K. Tra	Complete (arXiv:2006.04824)
15	Theory topic	Z. Ligeti	Authors stated intent
16	High Precision SM Predictions for Q	Guido Bell, Oscar Cata, Thorsten Feldmann, Tobias Huber, Alexander K	Authors stated intent
17	Rare charm decays	Nico Adolph, Rigo Bause, Hector Gisbert, Marcel Golz, Gudrun Hiller, M	Authors stated intent
18	Charm physics at Belle II	Belle II collaboration	Authors stated intent
19	B physics at Belle II	Belle II collaboration	Authors stated intent
20			

# Workshops

- Sept 28-29, 2020 “Lepton flavor violation and lepton universality violation in meson and baryon decays” (with RF5) <https://indico.fnal.gov/event/44442/>
- Jan 11-12, 2021 “Theory meets experiment on  $|V_{ub}|$  and  $|V_{cb}|$ ” (with TF05 and TF06), <https://indico.fnal.gov/event/46246/>
- w/c Feb 15, 2021: CPV in b decays (including mixing and baryons)
- w/c March 15, 2021: Charm mixing and CPV (including charm baryons)
- w/c April 26, 2021: Rare b and c decays